REMARKS

In the rejection of claims 2-4 under 35 U.S.C. §112, the Examiner asserts that the specification does not satisfy the "written description" requirement because the application as originally filed does not provide support for the limitation that both the warp and the weft comprise straight yarns.

The Applicant requests reconsideration of this rejection. Although paragraph 0017, which refers to FIGs. 3(a) and 3(b), says that the additional straight yarns S may be arranged along the warp "or" weft, the drawings themselves show the added straight yarns extending in both the warp and weft directions. Furthermore, paragraph 0019, which refers generally to the drawings, specifically describes the straight yarns S as "present in both the warp and weft directions." This description provides clear support for the language "wherein the ground fabric layer includes additional straight yarns inserted along the warp and weft of said woven fabric" in claim 1.

The rejection of claims 2-3 under 35 U.S.C. §102(b) is contradicted by the admission in paragraph 5 that Townley "does not disclose employing the straight yarns in both the warp and the weft." For this reason, withdrawal of this ground of rejection is requested.

The rejection of claims 1-4 under 35 U.S.C. §103 is based on Townley and Sakuma. Two separate reasons are set forth, one relying on Townley alone, and the other relying on both Townley and Sakuma. It appears that the reason for rejection which relies on Townley alone was intended to apply to claim 1, while the reason for rejection that relies on both Townley and Sakuma was intended to apply to claims 2-4, inasmuch as claims 2-4 are limited to the inclusion of additional straight yarns inserted along both the warp and weft of the woven fabric, and only Sakuma, not Townley, discloses the use of straight yarns extending in both directions.

In addressing the rejection of claims 1-4 under 35 U.S.C. §103, the differences between the invention and the prior art must be considered, and these differences are especially significant in this case.

The present invention relates to a papermaking felt comprising a ground fabric layer comprising a woven fabric, and a fibrous web integrally intertwined with the ground fabric layer by needling. It addresses the problem of deterioration in the water squeezing capability of a felt when used in a high speed papermaking machine, where the felt has little time between press stages to be restored to its original thickness. In the conventional papermaking felt, the ground fabric is composed of a conventional woven fabric composed of winding (undulating) warp and weft yarns. Because of the undulating structure of the warp and weft yarns, the length and width of the woven structure are affected by compression. The length and width of the woven ground fabric layer are increased when the felt is compressed, with a concomitant decrease in the thickness of the ground fabric. After a relatively short time in the high speed papermaking machine, the length and width dimensions take on a permanent change, the resilient character of the felt is lost, and the performance of the felt deteriorates. The incorporation of "relatively straight" yarns as part of the warp or weft (claim 1) or "additional straight yarns inserted along the warp and weft" (claims 2-4) increases the modulus of the ground fabric, suppresses the elongation of the felt in the longitudinal and sideward directions, and consequently reduces the tendency of the felt to lose its resilient character.

Townley is directed to an entirely different problem, namely "nip rejection." As explained by Townley, if a press nip load is high, or the felt yarns are not straight, they may exhibit a scissoring effect which results in a collection or bunching up of yarns at the entrance to the press nip. (Townley, column 1, lines 23-27) Townley recognizes that the

nip rejection phenomenon is due to naturally occurring voids in the woven structure of the press felt base fabric, and, instead of attempting to avoid nip rejection by increasing tension in the felt fabric at the nip, Townley fills these voids, using "stuffer" yarns, which extend in the cross-machine (CMD) direction. As explained by Townley, the stuffer yarns "provide increased dimensional stability to the base fabric 10 by preventing movement of woven MD yarns 12, especially when placed through a nip press." (Townley, column 3, lines 8-12). At first glance, the reference to "increased dimensional stability" makes Townley's disclosure appears to be highly pertinent to the Applicant's invention. However, as explained later in Townley's specification, the stuffer yarns "prevent the fabric 10 from excessively compressing and causing building at the entrance 52 to the nip 50." (Townley, col. 3, lines 57-63. See also FIGs. 6A and 6B, which illustrate the compressive forces and their effect.) What happens in Townley, therefore, is that the stuffer yarns, by filling the voids in the woven base fabric, prevent the machine direction (MD) yarns 12 from moving by directly sustaining compressive force applied by the press nip. The term "dimensional stability" as used in Townley, therefore refers to stability of thickness, not stability in the machine or cross-machine directions.

Concerning Townley, it is also important also to note that, in the example given at column 3, lines 12-23, the machine direction yarns are described as 0.019 inch diameter nylon monofilament yarns, and the cross machine direction stuffer yarns are also 0.019 inch diameter nylon monofilament yarns.

Sakuma relates not to a papermaking felt, but rather to a shoe press jacket, in which a base fabric is embedded in a resin. Conventional shoe press jackets tend to stretch both in the machine direction and in the cross machine direction, causing cracking of the resin and entry of moisture, requiring

stopping the machine for repairs such as width trimming or replacement of the jacket. (Sakuma col. 1, lines 40-43) Sakuma, therefore, uses a base fabric having straight or nearly straight yarns in at least one of the warp and weft to increase the modulus of the base fabric layer. (Sakuma column 1, lines 54 and 55.)

The above-described differences are such that one having ordinary skill in the art of papermaking felt design would not derive from either reference a suggestion leading to the papermaking felt structure as presently defined in the claims.

Turning to the claim language, claim 1 defines a felt "wherein at least part of the yarns of the other of said warp and weft of the ground fabric layer consists of yarns which are less flexible than the winding yarns which they cross and therefore relatively straight compared to said winding yarns which they cross."

As pointed out above, Townley gives an example in which the stuffer yarns are identical to the yarns that they cross. This is clearly different from what is defined by the above-quoted language from claim 1. Moreover, there is nothing else in Townley that suggests constructing a felt ground fabric in which at least part of the yarns the warp or weft consists of yarns which are less flexible than the winding yarns which they cross and therefore relatively straight compared to the winding yarns which they cross.

Sakuma, of course, relates to a shoe press jacket, which has a structure entirely different from that of a papermaking felt. Moreover, Sakuma lacks a suggestion of using less flexible yarns as at least part of the warp or weft, and, like Townley, even states that the same yarns that are used as the warp and weft of the ground fabric may be used as the straight yarns. (Sakuma, column 2, lines 13-16, and column 3, lines 16-25).

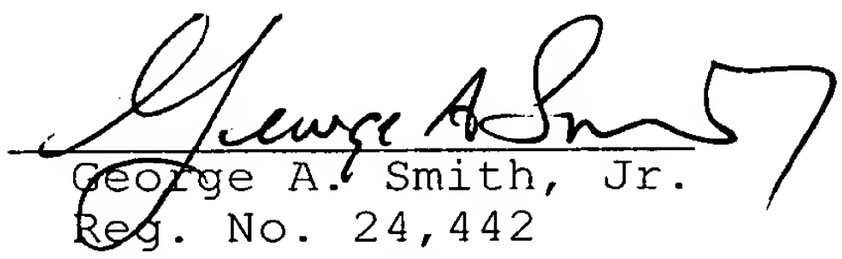
For the above reasons, we submit that the subject matter defined by claim 1 is not shown to have been obvious by Townley or by Sakuma.

Claim 2 defines a papermaking felt in which "the ground fabric layer includes additional straight yarns inserted along the warp and weft of said woven fabric." As pointed out above, Townley's stuffer yarns are present for the purpose of sustaining compression directly. Townley provides no teaching of providing additional straight yarns in both the warp and weft directions, the problem addressed by Townley, that of "nip rejection" can be, and is, addressed by stuffer yarns arranged in the cross-machine direction only. Townley shows no recognition of a problem in a papermaking felt to which the two-way straight yarns, as in Sakuma, would offer a solution. Sakuma, which is directed solely to a shoe press jacket structure, likewise shows no recognition of a problem in a papermaking felt. Accordingly, we also submit that Townley and Sakuma, whether taken individually, or in combination, do not demonstrate that the subject matter of claims 2-4 would have been obvious to a person of ordinary skill in the art.

For the reasons stated, favorable reconsideration and allowance of this application are respectfully requested.

Respectfully submitted,

HOWSON & HOWSON

By 

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